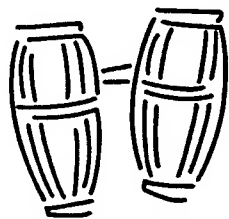


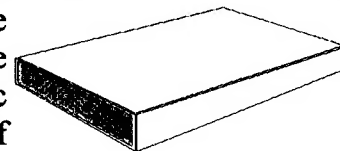


THE MARCH MEETING

At 7.30pm on Tuesday 4th March we will welcome to The Marconi College, Ken Godwin, G0PCA with a talk



entitled "From Jungle Drums to Pactor". Ken is a member of the British Amateur Radio Teleprinter Group (BARTG), who over the years have progressed digital communication from the basic mechanical teleprinter to the present computer controlled systems of error corrected data exchange. Although it will not be possible to provide an "on-air" contact, there will be live equipment to demonstrate the operating modes on computer monitors.



An interesting evening for members to update their knowledge on this subject.

DATES FOR YOUR DIARY

4 March CLUB MEETING - "Digimodes" by Ken, G0PCA.
8/9 March LONDON AMATEUR R & C SHOW - Picketts Lock.
1 April CLUB MEETING - "Infrared Imaging" by G7TKK.
20 April CAMBRIDGE REPEATER GROUP RALLY.

INTERNATIONAL MARCONI DAY - Geoff, G7KLV

The Society will again be operating an official station in the Writtle Hut at the Chelmsford Science & Industry Museum, Sandford Mill Road, Chelmsford. Members who would like to operate the Society rig on SSB/CW or SSB/CW/DIGITAL using their own rig (a long wire is available) are asked to contact Pat G0SBQ on (01245)467545 or at the March club meeting to book a slot. Operation will be between 0100hrs on Saturday 19th April to 0059hrs on 20th April, LOCAL TIME. The categories for awards are:-

FIXED AMATEUR - work 15 official stations Mixed Mode or CW or Digital only.

MOBILE AMATEUR - work 12 official stations Mixed Mode.

CLUB/GROUP - work 20 official stations Mixed or CW only or Digital.

SHORTWAVE LISTENER - log 15 official stations Mixed Mode or 10 stations CW only.

As part of the general celebration of Marchese Marconi's birthday, Chelmsford Council will be opening the Museum to the public to see our Station in operation between 10am and 4pm. We appeal for volunteers to act as hosts during 'open hours'. Please contact Pat.

An informal meeting to discuss arrangements for the event will be held after the Committee meeting on Wednesday 12th March at 8.30pm in Telford Lodge, Arbour Lane. Please come along.

LAST MONTH'S MEETING - Geoff, G7KLV

It is with some trepidation that I write this account of last month's meeting because aerials are one of my (many) weak subjects! I also admit that I am inclined to dose off for a few minutes during some club meetings. Yes, I know, all signs of rapidly advancing senility! However, not so, during Tony G4YTG's talk on Amateur Aerials. Whether he is holding forth on water softeners, kite flying or his Mum's washing machine's problems he always has something interesting to say. And so it was with last month's meeting.

His last talk to the club concerned professional aerials where money and, particularly, space are not serious limitations. Separate aerials are used for each range of frequencies with adequate spacing between them. However, for those of us with the average 'three up and three down' and matching gardens, compromise is inevitable. The requirements of an aerial are:-

a) that it tunes to the particular frequency of transmission and that it accepts power from the transmitter and dissipates it to the ether with minimum line and ASTU losses. This, usually, means that the transmitter must be fooled into thinking it is working into a 50 ohm load and an ASTU, correctly adjusted, will do this.

b) that it transmits in the desired direction; this depends on height above ground, to ensure the waves hit the reflecting layer for optimum distance.

c) that it is acceptable to the neighbours, the council bureaucracy and, probably more formidable, the XYL.

Tony pointed out that although the ASTU ensured that the transmitter sees 50 ohms it is also necessary to match the aerial itself to the feeder cable in order to obtain the 'book' performance of the overall system.

A word about aerial 'gain'. There is no such thing as aerial gain. Aerials have no gain. Hopefully, they are lossy, radiating all the power supplied to them. The term is useful in conjunction with directivity. If one represents the radiation pattern of an omni-direction aerial as a sphere made of squeegee material, it can be squeezed to form a protuberance in one direction at the expense of other directions. That's my interpretation of aerial gain, for what it's worth!

The basic element of an aerial is usually made up with a piece of wire half a wavelength long - the half wave dipole. This gives a current maximum in the middle and voltage maxima at the ends. A vertical aerial, using only half the length, can make use of the ground as a reflector, again with a current maximum at ground level. In our case and even some professional cases where it is not possible to achieve the necessary length vertically the length can be artificially increased using loading coils to tune a short aerial to the required frequency. However, it is the wire that radiates.

Long distance HF communication is dependent upon the ionised layers and it is necessary to direct the signal at the optimum angle for maximum DX. The radiation pattern of a half wave dipole depends on its height above ground, which acts as a reflector adding to the direct radiation. Lambda by two is optimum height but here again the amateur has to accept limitations, particularly on the lower frequency bands although optimum heights can sometimes be achieved on the higher HF frequencies.

Alternatively, the aerial length may be halved using a quarter wave vertical, with the ground acting as a reflector and loading coils positioned for optimum angle radiation and, capacity loading at the top to resonate.

Operation on more than one band can be achieved using 'traps' which are parallel LC circuits placed in series in the dipole; these are high impedances at the resonant frequency, effectively shortening a longer dipole.

Long wire aerials are generally about four wavelengths long and radiate along their length but are only practical at the higher frequencies. Rhombics can be arranged to radiate in either direction by alternate end feeding.

Open wire feeders have substantially less loss than coaxial cables and are preferred professionally where long distances are required. Coaxial feeders can be satisfactory as long as fairly short lengths are used which precludes them for many professional applications. They do have the advantage that their characteristic impedance, in the 50 ohm case, matches the transmitter at one end but they must be correctly matched to the aerial at the far end. Although the system will work if not correctly matched at the aerial, optimum 'gain' and directivity will not be obtained.

At VHF a quarter wave aerial is very effective but needs an earth plane to acts as a mirror or reflector giving the well known donut radiation pattern. A half wave vertical presents a problem in feeding but adding an eighth wavelength and a small loading coil make the very effective '5/8 whip' with a flattened donut radiation pattern with increased 'gain'.

A piece of wire, whatever it's dimensions, tunes to a particular frequency. Any piece of wire exhibits L and C. As the frequency increases the wire dimensions become more critical. At VHF, for instance, the length and thickness are extremely critical so that it is essential to follow the instructions exactly if you are building an aerial to a published design.

Take a half wave dipole fed with a constant frequency feeding it. As the length is increased it's reactance becomes increasingly capacitive until the critical length is reached when it suddenly becomes resistive. It resonates. As the length increases further the reactance changes abruptly and it looks increasingly inductive.

(continued on page 2, column 1)

All reasonably straight forward so far, and then Tony warned us that he was going to demonstrate the effects of reflectors and directors in a Yagi. Most people would have used that well known phrase for avoiding complicated explanations, 'It can be shown that....!' Not a bit of it. With the aid of a number of overlays, sleight of hand, sweet talk and convincing explanations he somehow managed to convince us all that a Yagi does in fact work like the text books tell us! I will not attempt to record his explanation but will retire gracefully with the phrase, 'It was shown that....!'

After a well deserved cup of tea Tony then discussed a number of other aerials including the Townsman, a VHF dual bander which appeared in Wireless World.

The VHF Ring was used on London bus's and when scaled for 2m would consist of a ring 6" diameter mounted about 2" above an 18" ground plane.

Another popular aerial is the loop for HF. This is not used professionally but is ideal where space or other considerations preclude long wires or dipoles. It's performance on 40m and above is comparable to a dipole. It exhibits a very high Q which in turn gives heavy currents and high voltages. Rejection of man-made interference is good.

And, lastly, he mentioned his own design for a discone which he published in PW, February 1989, p 26, if you are interested. Constructed of chicken wire covering 75-800MHz it had an SWR better than 1.2:1 at 144 and 430MHz.

Tony answered many questions and gave much good advice.

One question related to the caravan owner who had installed a quarter wave vertical on the tow-bar for static use. To his horror and dismay all the caravan road lights glowed when he fired up the TX. What should he do? Easy said Tony, "sling out a quarter wave ground plane making sure to use insulated wire and, particularly, the end, which will be at a voltage maximum and inclined to be a bit lively!"

Our thanks to Tony who gave us a most interesting and entertaining evening. He manages to make everything sound so easy, doesn't he!

NEW MEMBERS

This month we are pleased to welcome two new members, Bill Elliston, G3TIQ and his wife Doreen, G4WKV. Bill and Doreen are heard on the 21 Net and listen to the Backnang Net on Sunday evenings and the club Net on Tuesdays.

A C.A.R.S. FIRST - Geoff, G7KLV (with his Committee Member Hat on)

An event occurred at the Canvey rally which, I believe, was an all time 'first' for the Club. Chris G0IPU and Jan G7UVP had hired a table with the intention of selling off the remains of the recent annual Junk Evening.

They started early, loading their cars at Jan's, who had been storing the remainders in his garage. By nine o'clock they had unloaded and 'set up shop' and sat down to have a breather before 'doors open' at ten. By opening time they had already taken £15 from the other dealers, enough to pay for the table. These deals, Chris tells us, are all part of the horse trading that takes place before the public are admitted! A few minutes after we, the public, were admitted the aisles were packed and it was quite a fight to get to the small hall. Their stall was well laid out with clearly displayed, reasonable prices. They were open to all reasonable offers and offered discounts for quantities. All very professional!

Roy had supplied them with some Club publicity material for distribution. As Chris said, whether it leads to 'bums on seats' is open to conjecture!

Incidentally, their table was opposite that of the Essex Repeater Group which was selling a large quantity of surplus test gear at give-away prices.

By 3.30pm, like the rest of the dealers, they were packing up, tired but happy, having enjoyed a very successful day.

For some inexplicable reason Club presence at this rally was much lower than in past years. A great pity as it was a good rally.

Our thanks to Chris and Jan for their magnificent effort in making a clear profit of just over £50 for the Equipment Fund.

COMMITTEE MEETING

The next Committee meeting will be held at 7.30pm on Wednesday 12th March, in Telford Lodge, you are welcome to join us.

HF RADIO REPORT - Geoff, G3EDM

Our Chairman, G8DET, suggested there could be members interested in HF (High Frequency) propagation. My activities are largely confined to 20 metres SSB and Pactor with occasional forays into 40M and 80M for Long Distance Communications.

Now, 20M is a band I've used continuously since 1946 so seeing what happens over at least four sunspot cycles (each of 11 years, or being more precise two cycles of 22 years). As far as I understand, the main difference between each successive 11 years period is that the magnetic rotation of the sunspots reverses. The last reversal occurred approximately August 1995 and hence the astronomers could then say we had commenced cycle 23 (the numbers refer to 11 years cycles). However, the activity of the sun results in sunspots, and therefore solar flux, increasing from the commencement of the cycle. The increase is at first very slow and after about 12 months it is possible, 20M-wise, to detect enhancements in propagation every 27 days or so; this corresponds to the sun's rotation about its axis which results in the same sunspots facing the earth every 27 days. Each successive enhancement is not necessarily better than the previous one but it is possible by working stations in, say, Australasia on a regular basis to notice an upward trend in signal strength reports.

Superimposed over this trend is the seasonal trend for signals from Australasia to improve from September through to April due to the sun's apparent movement. In fact, between April and September the antipodal stations in New Zealand are seldom heard at all. At the moment (February), they are coming in regularly on SSB at strengths of S4-9.

This morning (19th Feb.) even the Perth, Western Australian stations were coming in at S5-9 on 20M on the long path over South America and the southern Pacific Ocean. This afternoon the Perth (WA) mailbox, VK6TN, was coming in S2-3 on the short path over SE Asia but sufficiently strong to provide 100 to 200 baud flow of data (I can just keep ahead with my typing!!). This brings me to the point that I monitor the solar data, in particular the flux, absorption figure (A-Index) and K Index on a daily basis. The lowest flux at the bottom of the sunspot cycle is about 67 and in recent months it has varied upwardly to a maximum of 85 during one of the enhancements. A flux of around 71 gives reasonable propagation so long as the Absorption Index (A-Index) is below 5; there have been days recently when it has been zero. This figure is of more importance to us here in the UK than to Mediterranean stations; the absorption has more effect the nearer the North Pole your QTH is. This results in the Italians and those in the South of Spain having the edge in making QSO's to Australia. In fact, when my brother, EA7BA, in southern Spain is working some Australians I cannot even hear! On the other hand there are times, perhaps just half an hour later that I get them at greater or equal strength. It is a useful comparison because our Yagis are identical and at similar heights.

Absorption figures have been as high as 26 and that spells out days when VK is inaudible. The K-Index relates to sudden disturbances on the sun's surface which take only minutes to affect the earth's ionosphere; we can expect the K-Index to increase at times through the next few years and there may be days when you think your receiver has died on you! Even the sky noise on 20M disappears!! The normal sky (white) noise on my system causes the S-meter to read between S1-2 most days. Anyway, listen around and see that you can hear.

MEMBERS ADVERTISEMENTS

FOR SALE

Listen to the new 75KHz band, Datong PC1, boxed with H.B. general coverage converter 50KHz to 30MHz in thirty bands of 1MHz, all crystal controlled, output 144 to 145MHz. Power supply required 10-13V D.C. at about 150mA. £70. Please contact Brian. G3CVI.

WANTED

Four Single Gang 0-300/500pf Variable Capacitors for Novice Exam project work. Please contact Chris, G0IPU ☎ (01245)269207.

73 from Roy & Ela Martyr,
G3PMX & G6HKM

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Deadline for April NewsLetter is Saturday 22nd March.